Space Weather Forecast

Issued on Wednesday, 06 July 2022 at 01:17 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight but increasing chance of R1-R2 Minor-Moderate radio blackouts. Chance of Minor Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Low over the past 24 hours. The most significant events were two Common-class flares at 05/0407UTC from the southwest quadrant, and at 05/1238UTC from near the northeast limb. The spot responsible for the larger flare at 05/0407 UTC has been fading, and was otherwise unremarkable in the period. There are currently 7 sunspots on the disc, none of which are looking especially complex, although the region near the northeast limb is difficult to fully assess at this time due to the viewing angle.
The larger flare gave a very faint partial halo in coronagraph imagery, which suggests that we may see a glancing blow from this Coronal Mass Ejection (CME) at Earth on 08 July.

Solar Wind / Geomagnetic Activity: The solar wind saw the tail end of CME effects becoming ambient, before the likely beginning of an entry into a coronal hole fast wind. The wind speed was initially slightly elevated just above 400 km/s, declining to just below 350 km/s. The Interplanetary Magnetic Field was weak throughout but with a recent increase, with the north-south component varying very weakly and mainly northward directed. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is Expected to be Low, with a Slight Chance of isolated Moderate-class flares. An increase is probable through the period as returning regions potentially rotate onto the eastern limb.

Solar Wind / Geomagnetic Activity: Earth may experience a glancing blow from the CME which occurred at 05/0407 UTC. This CME was difficult to assess, however it gave a faint partial halo in SOHO imagery and as such a low confidence glancing blow is possible on 08 July. Otherwise, solar winds are anticipated to increase from background to elevated levels due to a coronal hole fast wind, most likely during Day 1 (06 July). Elevated or slightly elevated wind speeds could last for much of this period.
Overall, geomagnetic activity is likely to increase early on Day 1 to be Quiet to Active possibly with the odd G1/Minor Storm interval, these most likely on Days 1 and 3 (06 and 08 July) as the fast wind arrives on Day 1 and the possible CME on Day 3. In addition, there is just a slight chance of G2/Moderate Storms on Day 3 in association with the CME.

Energetic Particles / Solar Radiation: In the absence of any significant sunspot development, no solar radiation storms are expected, with only one fading sunspot in the western solar hemisphere at present.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	20	30	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	25	30	30
Very Active	R3 to R5 X	No	1	2	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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